

What is claimed is:

1. A modified MSP-1 nucleic acid sequence, as shown in SEQ ID NO 1.
2. A process for preparing a modified MSP-1 nucleic acid comprising the steps of lowering the overall AT content of the natural gene encoding MSP-1, eliminating all mRNA instability motifs and replacing all rare codons with a preferred codon of the mouse mammary gland.
3. A modified MSP-1 nucleic acid prepared by the process according to claim 2.
4. A vector comprising a modified MSP-1 nucleic acid according to claim 1 and a goat beta casein promoter and signal sequence.
5. A host cell transformed with the vector according to claim 4.
6. A transgenic non-human mammal comprising a vector according to claim 4.
7. A transgenic non-human mammal comprising a modified MSP-1 nucleic acid according to claim 1.
8. A DNA vaccine comprising a modified nucleic acid according to claim 1.